What is claimed is:

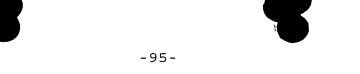
)

A method for identifying whether a compound inhibits entry of a virus into a cell which comprises:

- (a) obtaining nucleic acid encoding a viral envelope protein from a patient infected by the virus;
- (b) co-transfecting into a first ce 1/1
  - (i) the nucleic acid of step /(a), and
  - (ii) a viral expression vector which lacks a nucleic acid encoding an envelope protein, and which comprises an indicator nucleic acid which produces a detectable signal,

such that the first cell produces viral particles comprising the envelope protein encoded by the nucleic acid obtained from the patient;

- (c) contacting the viral particles produced in step (b) with a second cell in the presence of the compound, wherein the second cell expresses a cell surface receptor to which the virus binds;
- (d) measuring the amount of signal produced by the second cell in order to determine the infectivity of the viral particles; and
- (e) comparing the amount of signal measured in step (d) with the amount of signal produced in the absence of



the compound, wherein a reduced amount of signal measured in the presence of the compound indicates that the compound inhibits entry of the virus into the second cell.

- 2. The method of claim 1, wherein the indicator nucleic acid comprises an indicator gene.
- 3. The method of claim 2, wherein the indicator gene is a luciferase gene.
- 4. The method of claim 1, wherein the cell surface receptor is CD4.
- 5. The method of claim 1, wherein the cell surface receptor is a chemokine receptor.
- 6. The method of claim 1, wherein the cell surface receptor is CXCR or CCR5.
- 7. The method of claim 1, wherein the patient is infected with the HIV-1 virus.
- 8. The method of claim 1, wherein the nucleic acid of step (a) comprises DNA encoding gp120 and gp41.
- 9. The method of claim 1, wherein the viral expression vector comprises HIV nucleic acid.
- 10. The method of claim 9, wherein the viral expression vector comprises an HIV gag-pol gene.



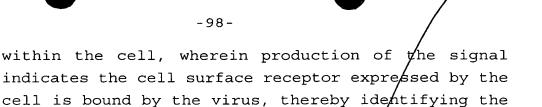
- 11. The method of claim 9, wherein the viral expression vector comprises DNA encoding vif, vpr, tat, rev, vpu, and nef.
- 12. The method of claim 1, wherein the first cell is a mammalian cell.
- 13. The method of claim 12, wherein the mammalian cell is a human cell.
- 14. The method of claim 13, wherein the human cell is a human embryonic kidney cell.
- 15. The method of claim 14, wherein the human embryonic kidney cell is a 293 cell
- 16. The method of claim 1, wherein the second cell is a human T cell.
- 17. The method of claim 1, wherein the second cell is a human T cell leukemia cell line.
- 18. The method of claim 1, wherein the second cell is a peripheral blood mononuclear cell.
- 19. The method of claim 1, wherein the second cell is an astroglioma cell.
- 20. The method of claim 19, wherein the astroglioma cell is a U87 cell.
- 21. The method of claim 1, wherein the second cell is a human osteosarcoma cell.
- 22. The method of claim 2, wherein the human osteosarcoma cell is an HT4 cell.
- 23. / The method of claim 1, wherein the compound binds to





the cell surface receptor.

- 24. The method of claim 1, wherein the compound is a ligand of the cell surface receptor.
- 25. The method of claim 23, wherein the compound comprises an antibody.
- The method of claim 1, wherein the compound inhibits membrane fusion.
- 27. The method of claim 1, wherein the compound is a peptide, a peptidomimetic, an organic molecule, or a synthetic compound.
- 28. The method of claim 1, wherein the compound binds the viral envelope protein.
- 29. A method for making a composition which comprises admixing the compound identified by claim 1 with a carrier.
- 30. The method of claim 29, wherein the carrier is saline, polyethylene glycol, a buffer solution, a starch, or an organic solvent.
- 31. A method for identifying a cell surface receptor which is bound by a virus upon infection of a cell by the virus which comprises:
  - (a) obtaining viral particles which comprise (i) a viral nucleic acid and (ii) an indicator nucleic acid which produces a detectable signal;
  - (b) contacting a cell which expresses a cell surface receptor with the viral particles from step (a); and
  - (c) measuring the amount of detectable signal produced



cell surface receptor as being bound by the virus

- 32. A method for identifying whether an antibody inhibits entry of a virus into a cell which comprises:
  - (a) obtaining nucleic acid encoding a viral envelope protein from a patient infected by the virus;
  - (b) co-transfecting into a first/cell

upon infection of the cell.

- (i) the nucleic acid of step (a), and
- (ii) a viral expression vector which lacks a nucleic acid encoding an envelope protein, and which comprises an indicator nucleic acid which produces a detectable signal,

such that the first cell produces viral particles comprising the envelope protein encoded by the nucleic acid obtained from the patient;

- (c) contacting the viral particles produced in step (b) with a second cell in the presence of the antibody, wherein the second cell expresses a cell surface receptor to which the virus binds;
- (d) measuring the amount of signal produced by the second cell in order to determine the infectivity of the viral particles; and
- (e) comparing the amount of signal measured in step (d) with the amount of signal produced in the absence of the compound, wherein a reduced amount of signal measured in the presence of the antibody indicates





that the antibody inhibits entry of the virus into the second cell.

- 33. A method for determining susceptibility of a virus to a compound which inhibits viral cell entry which comprises:
  - (a) obtaining nucleic acid encoding a viral envelope protein from a patient infected by the virus;
  - (b) co-transfecting into a first cell,
    - (i) the nucleic acid of step (a), and
    - (ii) a viral expression vector which lacks a nucleic acid encoding an envelope protein, and which comprises an indicator nucleic acid which produces a detectable signal,

such that the first cell produces viral particles comprising the envelope protein encoded by the nucleic acid obtained from the patient;

- (c) contacting the viral particles produced in step (b) with a second cell in the presence of the compound, wherein the second cell expresses a cell surface receptor to which the virus binds;
- (d) measuring the amount of signal produced by the second cell in order to determine the infectivity of the viral particles; and
- (e) comparing the amount of signal measured in step (d) with the amount of signal produced in the absence of the compound, wherein a reduced amount of signal measured in the presence of the compound indicates that the virus is susceptible to the compound.



- 34. A method for determining resistance of a virus to a compound which inhibits viral entry into a cell which comprises:
  - (a) determining susceptibility of a virus to a compound according to the method of claim 33, wherein a nucleic acid encoding a viral envelope protein is obtained from a patient at a first time;
  - (b) determining susceptibility of the virus to the compound according to the method of claim 33, wherein the nucleic acid encoding the viral envelope protein is obtained from the patient at a later second time; and
  - (c) comparing the susceptibilities determined in steps
    (a) and (b), wherein a decrease in susceptibility at
    the later second time indicates resistance of the
    virus to the compound.
- 35. A method for identifying a mutation in a virus that confers resistance to a compound that inhibits viral entry into a cell which comprises:
  - (a) determining the nucleic acid sequence or the amino acid sequence of the virus prior to any treatment of the virus with the compound;
  - (b) obtaining a virus resistant to the compound;
  - (c) determining the nucleic acid sequence or the amino acid sequence of the resistant virus from step (b); and
  - (d) comparing the nucleic acid sequence or the amino acid sequences of steps (a) and (c), respectively, so as to identify the mutation in the virus that confers





- resistance to the compound.
- 36. The method of claim 35, wherein the virus obtained in step (b) is the virus of step (a) grown in the presence of the compound until resistance is developed.
- 37. The method of claim 55, wherein the virus obtained in step (b) is isolated from a patient which has been undergoing treatment with the compound.